The nebulæ, of which an account is given in this paper, were observed with the speculum of three feet aperture described in the Philosophical Transactions for 1840: and the object of the observations was rather to test its powers and to decide the merits of progressive experiments than to seek for astronomical results. Sketches are given of the actual appearance of five of the nebulæ observed, namely those numbered 88, 81, 26, 29 and 47 in Sir John Herschel's catalogue. The author observes, in conclusion, that all that he has seen confirms the accuracy of Sir John Herschel's judgment in selecting the nebulæ which he places in the class designated as resolvable; and that every increase of instrumental power still continues to add to the number of the clusters at the expense of the nebulæ, properly so called. It would still, however, be unsafe, he further remarks, to conclude, that such will always be the case, and thence to draw the obvious inference that all nebulosity is but the glare of stars too remote to be separated by the utmost power of our instruments.

June 20, 1844.

JAMES WALKER, Esq., V.P., in the Chair.

1. "On the Structure of the Ultimate Fibril of the Muscle of Animal Life." By Erasmus Wilson, Esq., Lecturer on Anatomy and Physiology in the Middlesex Hospital; in a Letter addressed to Peter Mark Roget, M.D., Sec. R.S. Communicated by Dr. Roget.

By resorting to peculiar methods of manipulation, and employing a microscope of more than ordinary power, the author, with the assistance of Mr. Lealand, has succeeded in discovering the real structure of the ultimate muscular fibril, in a specimen taken from the arm of a strong healthy man immediately after its amputation. He finds each fibril to be composed of minute cells, disposed in a linear series, flattened at their surfaces of apposition, and so compressed in the longitudinal direction as to leave no marginal indentation on the surface; thus constituting a uniform cylinder, divided into minute subdivisions by transverse septa, which are formed by the adherent surfaces of contiguous cells. The diameter of the fibril, in the state of relaxation, is the 20,000th part of an inch. The cells are filled with a transparent substance, to which the author gives the name of *Myoline*, and which differs in its refractive density in different cells. In four consecutive cells the myoline is of greater density than in the four succeeding cells, and this alternation is repeated throughout the whole course of the fibril. In consequence of all the fibrils composing the ultimate fasciculus having the same structure, and the cells, which are in lateral juxtaposition, containing myoline of the same density, they act similarly on light, and the whole presents, to the eye of the microscopic observer, a succession of striæ or bands, dark and luminous alternately, and transverse to the direction of the fasciculus; an appearance

which has been noticed by preceding observers, but of which the cause had not hitherto been ascertained. A dark stria may occasionally appear as a luminous one, and *vice versâ*, when viewed by light transmitted at different degrees of obliquity.

The structure here described, the author remarks, reduces the muscular fibre to the simple type of organization exhibited in the combination of a series of cells, associating it with other tissues of cell formation, and will probably, he thinks, open new sources of explanation of the immediate agency of muscular action, a power hitherto involved in the deepest mystery.

2. "On the Comparative Anatomy of the Thyroid Gland." By John Simon, Esq., Assistant Surgeon to King's College Hospital, and Demonstrator of Anatomy in King's College. Communicated by Joseph Henry Green, Esq., F.R.S.

The author, considering that the careful dissections of Meckel and Cuvier have fully established the universal existence of a thyroid gland in the whole of the class Mammalia, proceeds to consider the comparative anatomy of this organ in the remaining classes of vertebrated animals. His dissections of birds have included all the orders, and, in most instances, several families from each: he has never failed to find in them a thyroid gland, and, with the aid of the microscope, to recognise its peculiar structure; he presumes, therefore, that it is universally present in that class of animals. He has also detected the presence of this organ in reptiles of every order; although generally either wholly overlooked by anatomists, or mistaken for the thymus. Descriptions are here given of its appearance, position and structure in different families of Chelonia, Sauria, Ophidia and Batrachia. In the class of Fishes, it is by no means universally or even generally present. The author has found it in the carp, anableps, pike, exocetus, cod, haddock, whiting, eel, sturgeon, callorhynchus, shark and skate, and perhaps in the lamprey. On the other hand, it appears to be absent in the perch, mullet, gurnard, mackerel, tench, salmon, trout, herring, plaice, halibut, turbot, sole, cyclopterus, gymnotus and balistes.

The general conclusion which the author deduces from his researches is, that the distribution of the thyroid gland is regulated by a simple and uniform law; being dependent on the existence or non-existence of another organ with which its presence alternates, and which, in many fishes, assumes the form of a minute supplementary gill, the vessels of which communicate, on the one hand, with the systemic veins about the base of the cranium, and on the other, by a single long trunk with the first branchial vein.

Although the thyroid gland occupies various situations in different animals, it always maintains an intimate relation with the vascular supply of the brain, and is always so nourished as to be capable of a greater or less nutrition according to the activity or repose of that nervous centre.

3. "On the Resolution of Numerical Equations." By Joseph Agar,